WM DOCKET CONTROL CENTER

Department of Energy Chicago Operations Office '85 007 16 A9:03 Salt Repository Project Office 505 King Avenue Columbus, Ohio 43201-2693 Commercial (614) 424-5916 F.T.S. 976-5916

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October 10, 1985

John J. Linehan, Section Leader Salt Section Repository Projects Branch Division of Waste Management, MS 623-SS U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Dear Mr. Linehan:

SUBJECT: REQUEST BY NRC FOR REPORT ON SALT RADIATION DAMAGE

Reference: Letter of July 11, 1985, from John J. Linehan (NRC) to J.O. Neff (SRPO) entitled "Request for Report on Salt Radiation Damage (Reference 1: L.J. Teutonico Report)"

In your referenced letter, a request was made of a copy of the draft report by L.J. Teutonico. Under separate cover, copies of the Teutonico draft report have been transmitted to you.

A request was also made for information concerning our plans to publish this and related reports from the Salt Irradiation Effects Program being conducted for the Salt Repository Project at Brookhaven National Laboratory. Attachment 1 lists seventeen (17) publications which have resulted from the BNL program to date. Attachment 2 lists an additional four (4) reports from BNL which are currently in the review process and are expected to be published in the spring of 1986.



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If you have any further questions concerning this subject, please contact K.K. $\ensuremath{\mathsf{Wu}}$.

Sincerely,

under hil

J.O. Neff Program Manager Salt Repository Project Office

SRPO:KKW:max:9075B

Enclosures: As Stated

cc: R. Johnson, NRC T. Verma, NRC L. Casey, SRPO

ST# 014-86

ATTACHMENT 1

PUBLISHED PAPERS AND REPORTS

- Radiation Damage Studies on Synthetic NaCl Crystals and Natural Rock Salt for Waste Disposal Applications. K. J. Swyler, R. W. Klaffky and P. W. Levy, <u>Scientific Basis of Nuclear Waste Management</u>, <u>Vol. 1</u>, G. J. McCarthy, editor (Plenum, New York), p. 349.
- 2. Radiation Damage Studies on Synthetic NaCl Crystals and Natural Rock Salt for Waste Disposal Applications, II. R. W. Klaffky, K. J. Swyler and P. W. Levy, <u>Ceramics in Nuclear Waste Management</u>, <u>Conference 790420</u>, Proc. of an Int. Symposium, Cincinnati, Ohio, April 3 - May 2, 1979, T. D. Chikalla and J. E. Mendel, editors (Tech. Info. Center, U. S. Dept. of Energy, Washington, 1979) pp. 320-324.
- 3. Radiation Induced Color Center and Colloid Formation in Synthetic NaCl and Natural Rock Salt. P. W. Levy, K. J. Swyler and R. W. Klaffky, Third Europhysics Topical Conf., Lattice Defects in Ionic Crystals, J. de Physique 41, Supplement-Colloque C6 (1980) pp. 344-347.
- 4. Thermoluminescence and Optical Bleaching in Minerals Exhibiting Second Order Kinetics and Other Charge Retrapping Characteristics. P. W. Levy, PACT-Journal of the European Study Group on Physical, Chemical and Mathematical Techniques Applied to Archaeology, 6, 224 (1982).
- Recent Studies on Radiation Induced Color Center and Colloid Formation in Synthetic NaCl and Natural Rock Salt for Waste Disposal Applications. K. J. Swyler, R. W. Klaffky and P. W. Levy, <u>Scientific Basis of Nuclear Waste</u> <u>Management, 2</u>, C. J. M. Northrup, Ed. (Plenum, N.Y., 1980), p. 553.
- 6. Radiation Damage Studies on Natural Rock Salt from Various Geological Localities of Interest to the Radioactive Waste Disposal Program. P. W. Levy, <u>Proc. Third Argonne Workshop on Basic Problems in Nuclear Waste</u>, Argonne, Ill., October 1981, Nuclear Technology 60, 231-243 (1983).
- 7. Radiation Damage Studies on Synthetic NaCl Crystals and Natural Rock Salt for Radioactive Waste Disposal Applications. P. W. Levy, J. M. Loman, K. J. Swyler, and R. W. Klaffky, <u>The Technology of High-Level Nuclear Waste</u> <u>Disposal</u>, <u>1</u>, P. L. Hofmann, Ed. (Tech. Information Center, U. S. Dept. of Energy, Oak Ridge, TN, 1981), pp. 136-167 (DOE/TIC-4621).
- Radiation Induced Sodium Metal Colloid Formation in Natural Rock Salt from Different Geological Localities. J. M. Loman, P. W. Levy and K. J. Swyler, <u>Scientific Basis of Nuclear Waste Management</u>, <u>6</u>, pp. 433-440, S. V. Topp, Ed., North-Holland, New York (1982).

- 9. Thermoluminescence of the Mineral Components in Granite. R. G. Schwartzman, J. A. Kierstead, and P. W. Levy, PACT-Journal of the European Study Group on Physical, Chemical and Mathematical Techniques Applied to Archaeology, <u>9</u>, pp. 163-174 (1983).
- Recent Studies on Radiation Induced F-center and Colloid Particle Formation in Synthetic NaCl and Natural Rock Salt. P. W. Levy, J. M. Loman, K. J. Swyler and D. R. Dougherty. Radiation Effects, <u>72</u>, pp. 303-308 (1983).
- Thermoluminescence in Systems not Subject to the Usual Approximations for First and Second Order Kinetics. P. W. Levy, Radiation Effects, <u>72</u>, pp. 259-264 (1983).
- Radiation Induced F-Center and Colloid Formation in Synthetic NaCl and Natural Rock Salt: Applications to Radioactive Waste Repositories. P. W. Levy, J. M. Loman, and J. A. Kierstead, Nuc. Inst. and Tech. in Phys. Res., <u>B1</u>, pp. 549-556 (1984).
- Thermoluminescence Systems With Two or More Glow Peaks Described by Anomalous Kinetic Parameters. P. W. Levy, Nuc. Inst. and Tech. in Phys. Res., <u>B1</u>, pp. 436-444 (1984).
- 14. Very Rough Preliminary Estimate of the Colloidal Sodium Induced in Rock Salt by Radioactive Waste Canister Radiation. P. W. Levy and J. A. Kierstead. <u>Scientific Basis of Nuclear Waste Management, Materials Res.</u> <u>Soc. Symp. Proc. 26</u> (Elsevier, N.Y. 1984) pp. 727-734.
- Facilities for Studying Radiation Damage in Nonmetals During Irradiation.
 P. W. Levy. Society for the Advancement of Material and Process Engineering (SAMPE) Journal, 21, pp. 35-40, 1985.
- 16. ONWI-281: BNL 28456, Thermoluminescence and Optical Bleaching in Minerals Exhibiting Second Order Kinetics and Other Charge Retrapping Characteristics, P. W. Levy, July 1981.
 - BNL-29909, Radiation Damage Studies on Synthetic NaCl Crystals and Natural Rock Salt for Radioactive Waste Disposal Applications, P.W. Levy, J.M. Loman, K.J. Swyler, and R.W. Klaffky, <u>The Technology of High-Level</u> <u>Nuclear Waste Disposal</u>, P.L. Hofmann (Ed.), <u>DOE/TIC-4261</u>, Vol. 1 (DE82009594), U.S. Dept. of Energy Tech. Info. Div., Oak Ricge, TN, 1981, pp. 136-167.

ATTACHMENT 2

BROOKHAVEN NATIONAL LABORATORY (BNL) PROGRAM CONDUCTED FOR THE SALT REPOSITORY PROJECT RADIATION EFFECTS STUDIES ON ROCK SALT AND OTHER MINERALS FOR WASTE DISPOSAL APPLICATIONS

REPORTS AND PAPERS IN PREPARATION

- 1. Very Rough Preliminary Estimate of the Sodium Metal Colloid Induced in Natural Rock Salt by the Radiations from Radioactive Waste Canisters, P.W. Levy and J.A. Kierstead.
- 2. Radiation Damage in Rock Salt From the Potential Radioactive Waste Repository Sites at Palo Duro, TX, Gibson Dome, UT, and Los Medanos, NM, FY 1984 Interim Report, P.W. Levy and J.A. Kierstead.
- 3. Radiation Damage Measurements on Rock Salt and Other Minerals for Waste Disposal Applications, Annual Report for the Period 10/1/83 9/30/84, P.W. Levy and J.A. Kierstead.
- 4. The Role of (100) Edge Dislocations in Nucleating Radiation-Induced Colloid Particles in Sodium Chloride, L.J. Teutonico.